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16. Abstract

The purpose of this study is to investigate the impact of privatizing all civil engineering operations in the Louisiana Department of Transportation and Development (DOTD). It was investigated by conducting a national and international literature review and a cost analysis. Privatization of all civil engineering operations in a state DOT has not been attempted in the U.S. but several other countries have privatized their entire state transport agencies. Most foreign privatization efforts report cost savings and improved delivery of service. However, not all applications have succeeded and all express concern with one or more aspects of their application, resulting in the privatization process remaining a "work in progress" in most applications. In this study, the cost comparison of conducting all civil engineering operations in-house versus by the private sector resulted in an estimate of no cost savings from privatizing the civil engineering operations in DOTD. The privatization of the civil engineering operations of DOTD is not recommended, although it is recommended that opportunities to outsource more individual tasks in DOTD be investigated.

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Investigation into the Impact of Privatizing Civil Engineering Operations in Louisiana DOTD

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ABSTRACT

The purpose of this study is to investigate the impact of privatizing all civil engineering operations in the Louisiana Department of Transportation and Development (DOTD). It was investigated by conducting a national and international literature review and a cost analysis. Privatization of all civil engineering operations in a state DOT has not been attempted in the U.S., but several other countries have privatized their entire state transport agencies. Most foreign privatization efforts report cost savings and improved delivery of service. However, not all applications have succeeded and all express concern with one or more aspects of their application, resulting in the privatization process remaining a “work in progress” in most applications. In this study, the cost comparison of conducting all civil engineering operations in-house versus by the private sector resulted in an estimate of no cost savings from privatizing the civil engineering operations in DOTD. The privatization of the civil engineering operations of DOTD is not recommended; however, it is recommended that opportunities to outsource more individual tasks in DOTD be investigated.

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IMPLEMENTATION STATEMENT

This study was conducted in response to House Resolution 105 of the House of Representatives of the Louisiana State Legislature requesting the Louisiana Department of Transportation and Development study the possibility of privatizing civil engineering operations in the Department. Implementation of recommendations of this study will be at the discretion of the Louisiana Department of Transportation and Development and the Louisiana Legislature.

It is recommended that the civil engineering operations of DOTD not be privatized but opportunities to outsource more individual tasks in DOTD be investigated.

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INTRODUCTION

This report documents the methodology, analysis, results, conclusions, and recommendations of a study into the possibility of privatizing the civil engineering operations in the Louisiana Department of Transportation and Development (DOTD). The study was conducted in response to House Resolution 105 (HR 105) of the Louisiana House of Representatives (see Appendix 1) in which DOTD is requested to "study the possibility of privatizing civil engineering operations in the Department." This study follows a recommendation of the Louisiana Governor's Commission on Streamlining Government in 2009 that at least 80 percent of DOTD's design activities be outsourced and a more recent suggestion by Honorable Maurice McTigue of the Mercatus Center at George Mason University that the whole civil engineering activity at DOTD "be subjected to a privatization study and sold off as a stand-alone business" (see Appendix 2).

The move to privatize public activities began in earnest in the United States in the 1980s. The intention was to reduce costs and improve efficiency by allowing the free market to establish minimum cost and maximum performance through open competition. A study by the World Bank (Talvitie, 1996) suggests that restructuring highway Departments in the direction of privatization generally does lead to reduced costs, a greater output, and a reduced time of delivery. In their study, they suggest that highway Departments typically progress from performing all activities themselves to progressively outsourcing an increasing portion of their activities until they are faced with the prospect of privatizing, or corporatizing as they refer to it, their entire operation. In the United States, state Departments of Transportation typically outsource approximately half of their construction and design activities (Witheford, 1997, Warne 2003). DOTD outsources most of its construction and approximately 2/3 of its design activities (Schneider et al., 1998). The next phase of privatizing or corporatizing DOTD was investigated in this study.

OBJECTIVE

The objective of this study was to evaluate the possibility of privatizing all civil engineering operations within the Louisiana Department of Transportation and Development. The evaluation involved comparing the cost and non-cost factors associated with the status quo versus the privatization of the civil engineering operations in the Department.

SCOPE

The scope of this study is limited to the Department of Transportation and Development in Louisiana. It is also limited to considering the privatization of civil engineering operations and therefore excludes the management, financial, and operational aspects of DOTD. It is assumed that the Office of the Secretary and the Office of Management and Finance will continue to function as they currently do, providing policy, management, and fiscal direction to the Department, whether the engineering functions are provided in-house or through the private sector. In addition, the administrative and accounting services provided to civil engineering activities in the Offices of Engineering, Multimodal Planning, and Operations are assumed to remain in effect and provide the same support to a privatized engineering operation as they currently do. Expansion of the outsourcing of individual engineering activities in DOTD beyond that currently conducted is not considered as an option in this study – only the privatization of all civil engineering operations within the Department. The current level of outsourcing of individual activities is assumed to continue whether the civil engineering operations within the Department are privatized or not.

METHODOLOGY

Background

Functions Performed by DOTD

In order to understand what it would mean to privatize civil engineering operations in DOTD, it is necessary to establish the scope of operations in the Department and to identify the civil engineering activities within the whole. The organizational structure of DOTD is shown in Figure 1 and the sections in which most conventional civil engineering operations are conducted are shown enclosed in a dotted line. Civil engineers do function within the Office of the Secretary and the Office of Management and Budget along with officials from other disciplines (e.g., financial, legal, human resources, and auditing) but they function as managers rather than as engineers in those sections.

It is assumed that the functions performed by the Office of the Secretary and the Office of Management and Finance will need to remain in effect even if civil engineering operations are privatized elsewhere in the Department. That is, they will need to continue to formulate and implement policy, standards, regulations, financial control, oversight, and quality control. They will also have to assume the new responsibility of preparing, evaluating, awarding, monitoring, and closing out contracts on civil engineering operations if the private sector conducts the civil engineering operations in the Department.

The operations conducted in the Offices of Multimodal Planning, Engineering, and Operations are described below. Following this, a national and international literature review is presented.

Office of Multimodal Planning. The Office of Multimodal Planning has the fewest personnel among the three offices in which civil engineering operations are conducted in DOTD. On December 31, 2011, 108 persons were employed in Multimodal Planning of which 58 were in technical positions. The Office of Multimodal Planning administers the sections falling under its jurisdiction, manages the budget of the Office, and manages federal planning funds from the Federal Highway Administration (FHWA). Individual sections falling under the Office of Multimodal Planning are:

1. **Intermodal transportation.** The Intermodal Transportation section serves a diverse

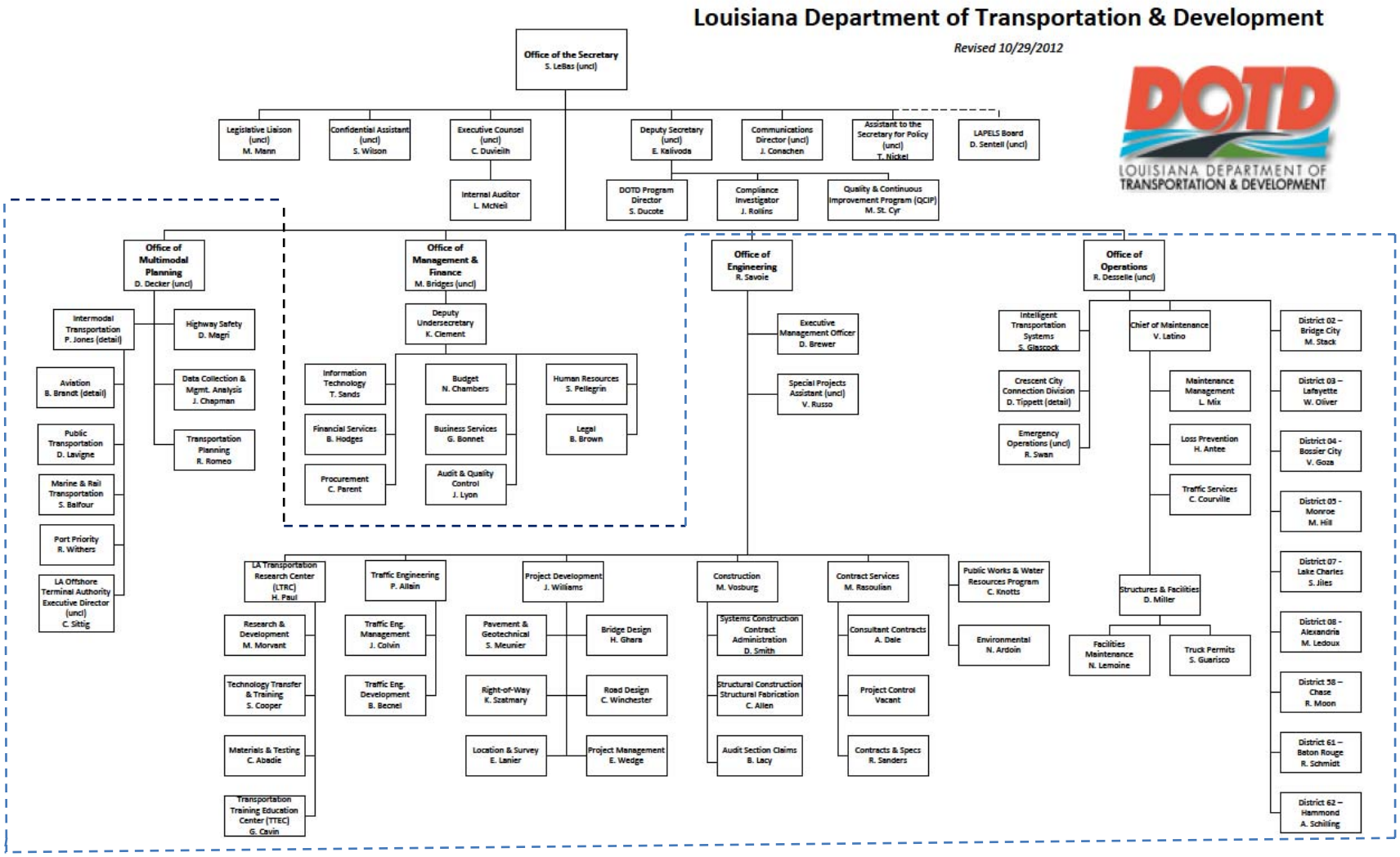

Figure 1
DOTD organizational structure

set of transportation modes for the state including aviation, public transportation, marine, rail, port, and pipeline. It coordinates national and state level organizations for marine, port, and rail issues (NWC, SCOWT, SCORT, SHSRC, S4PRC, PAL, DNR, GICA, RRVA, and ORVA). It is also the state resource for public, legislature, and congressional delegation enquiries regarding marine, port, and rail matters.

The activities conducted within individual sections of the Intermodal Transportation parent section are:

- The Aviation section manages the State Capital Outlay Budget for aviation as well as the aviation priority program activities for approximately 160 federally-funded and 330 unfunded projects; it ensures program development with Title 2 and Title 70 procedures, manages overall statewide PCI system standards and lighting standards, coordinates programs between state and the Federal Aviation Authority (FAA), manages the Air Carrier and General Aviation Maintenance Program, conducts the Obstruction Removal Program, certifies all new landing strips and helicopter sites, inspects over 788 existing sites, serves as the state's reporting agency for the Civil Air Patrol, and conducts aviation accident/incident investigations.
- The Public Transportation section in DOTD is responsible for public transportation in the state and is the designated recipient for nine Federal Transit Administration programs that include project oversight, technical assistance, and training. These programs provide funding for operating assistance, capital assistance, planning assistance, and construction projects to public and private entities statewide. The state's goals for the programs are to promote and provide for the availability and effective use of public transportation services, maximize the effective use of available program resources, and improve public transit in all areas of the state so that Louisiana citizens may enjoy an adequate level of personal mobility. DOTD has been designated by the Governor as the state agency responsible for the administration and coordination of the Federal Transit Administration Programs. The financial resources are available to the state under authority of Title 49, U.S.C. Sections 5303, 5304, 5310, 5316 and 5317.
- The Marine and Rail section oversees marine and rail projects throughout the state. It administers the Corps of Engineers Budget Requests to the Congressional Delegation, acts as the non-federal sponsor for the Mississippi River, manages marine waterway infrastructure investments, develops marine navigation project priorities through DOTD budget requests, co-authors the rule making and planning for hydrokinetic structures, conducts an annual update of the LA Marine

Transportation System Report, and coordinates with the Department of Natural Resources in conducting the Beneficial Dredge Material process. As regards rail matters, the section manages statewide rail improvement projects and studies for freight movement, manages the New Orleans Rail Gateway Program, manages the $45 million dollar expansion to the New Orleans Fixed Guideway System (Trolleys), and assists with passenger rail commission issues and studies.

- The Port Priority section develops and secures funding for the statewide Ports Priority Program for port projects. It manages port projects from conception to fruition, including reimbursements.
- The Louisiana Offshore Terminal Authority (LOTA) is an entity within DOTD responsible for monitoring the environmental impact of the oil pipeline from the Louisiana Offshore Oil Port (LOOP) in the Gulf of Mexico. Its function is to ensure that the pipeline's impact on the environment when it comes ashore is monitored on a continuous basis and complies with the rules, regulations, and statutes set forth by the state of Louisiana. The director of LOTA is assisted by a Project Review Committee (PRC) consisting of representatives from federal and state environmental agencies, the Coast Guard, academia, and the company that operates the pipeline. The purpose of the PRC is to oversee the environmental monitoring program let to private companies in a competitive bid process every three years. The monitoring activity has continued without interruption since construction of the pipeline in 1981.

2. **Highway Safety.** The Highway Safety section within the Office of Multimodal Planning is responsible for conducting the Highway Safety Improvement Program (HSIP); Traffic Records Program; Strategic Highway Safety Plan (SHSP); Fatality Analysis Reporting System (FARS); Bicycle/Pedestrian Program; Local Road Safety Program (LRSP); Safe Routes to School Program (SRTS); Highway Safety Public awareness programs/campaigns (partnering, summits/conferences; PI &E Campaigns; etc.); High Profile Safety Studies (e.g. US 61, I-10 over the Atchafalaya Basin, I-12, Median Crossovers, Wet-Weather, etc.); Tort Reduction; and Operation Lifesaver.

3. **Data Collection and Management Analysis.** The Data Collection and Management Analysis section is responsible for establishing and maintaining permanent and temporary traffic counting stations throughout the state to allow annual monitoring of traffic volumes reported on an annual basis. The section is also responsible for maintaining a highway inventory, a pavement management system that monitors

pavement conditions and maintenance activities, and a bridge management system that monitors the condition of bridges.

4. **Transportation Planning.** The Transportation Planning section is responsible for developing the Highway Program and the State Transportation Improvement Program (STIP) in which projects are identified for implementation together with their impact on air quality. The section is also responsible for establishing coordination between statewide and urban planning, developing a statewide transportation plan, identifying highway needs in the state as regards new construction, road widening, and rehabilitation. The section is responsible for managing the Highway Performance Monitoring System (HPMS) in which the extent, condition, and performance of highways in each state in the union are collected annually and reported collectively to the Federal Highway Administration (FHWA). The section is also responsible for Federal Earmark Program Management, Intermodal Program Management, Road Transfer Program Management, and Mapping.

Office of Engineering. The Office of Engineering had a total employment of 553 on December 31, 2011, of which 430 were in technical positions. The Office is headed by the Chief Engineer and has a higher percentage of engineering staff than any other Office in DOTD. The Office of Engineering has a large number of sections of which only the main ones are discussed below:

1. **Louisiana Transportation Research Center (LTRC).** The Louisiana Transportation Research Center is a research center located on the campus of Louisiana State University funded through DOTD. It conducts transportation-related applied research, operates a technology transfer program, and provides technical assistance to DOTD on request.

   The research program is developed with input from state and local government, universities, and private industry. Technical assistance involves provision of analysis and recommendations to field and design engineers for quick turnaround problem solving. Often this requires a field visit to observe a construction problem, with associated field or laboratory tests resulting in a recommended change in specifications, design details, or construction procedures.

   The functions and duties of the Technology Transfer Section of LTRC as mandated by legislation are (1) to offer educational and training programs in both fundamental and state-of-the-art practice in the field of transportation systems and related areas by offering training sessions, short courses, demonstration projects, and conferences

funded by the Department and the United States Department of Transportation's Federal Highways Administration; (2) to develop and implement a technology transfer program funded by the United States Department of Transportation and any other Department which shall provide a mechanism for conveying modern transportation systems practices and procedures to municipalities and parishes; and (3) to report and publish research findings that contribute to the fundamental knowledge and facilitate the implementation of enhanced technology, which may result in more economical practices in transportation systems. The section's activities are supported by the Technology Transfer and Education Center (TTEC) located next to LTRC on the LSU campus.

The director of LTRC supervises the Materials and Testing Lab of DOTD. The mission of the Materials and Testing Section is to develop, administer, and regulate DOTD's Materials Quality Assurance Program, environmental evaluation programs, and geotechnical exploration and testing programs. The Materials Quality Assurance Program includes materials evaluation and design, materials specification development, and conformance programs.

2. **Traffic Engineering.** This section's mission is to provide the professional engineering direction needed to ensure that the highway infrastructure is developed in accordance with established safety standards and that the state's investment in that infrastructure is preserved and improved so that traffic flows as safely and efficiently as possible both now and in the future. Traffic Engineering and subsections Traffic Engineering Management and Traffic and Engineering Development are involved in conducting analysis into access management, traffic impact studies, pavement markings, signals, Manual of Uniform Traffic Control Devices (MUTCD) interpretation, intersection controls such as roundabouts and all-way stops, traffic studies, statewide traffic engineering policies, speed limits, review special sign request for interstate and non-interstate roadways, photo enforcement, ramp metering review and policy, striping programming and projects, queue analysis, temporary traffic control review and standards, and flashing beacon study and review.

3. **Project Development.** Project Development includes road design, bridge design, pavement design, geotechnical, location and survey, and right-of-way procurement.

   The Road Design section is a multi-faceted organization comprised of in-house design squads, project managers, program managers, and the Hydraulics Unit. The

road design section is responsible for the delivery of roadway construction plans and for assistance to 10 metropolitan areas in Louisiana in improving their roadways, bridges, signal systems, etc. The Hydraulics Unit in the section is responsible for the technical expertise in the areas of roadway drainage, bridge hydraulics, and hydrology. The unit is also responsible for the bridge scour program. The unit is responsible for establishing DOTD policy and procedures related to these areas.

In the Bridge Design section, bridges are designed in-house and bridges designed by consultants are checked and approved by in-house engineers. The section is also responsible for technical studies, roadside and bridge safety, technical legal support, consultant coordination, and mechanical and electrical plans. They also provide plans and maintenance services for movable bridges as well as highway lighting and bridge capacity rating for on- and off-highway systems.

The primary function of the Pavement and Geotechnical Design section is to design pavement structures, foundations for bridges, retaining walls, and embankments for the statewide transportation system. This section also monitors the construction of these facilities as related to pavement performance, pile driving, drilled shafts, settlement monitoring, and embankment stability problems.

The Right-Of-Way section is responsible for the acquisition of real estate using both in-house and contracted private partners.

The Location and Survey section provides topographic, property surveys and drainage maps for project development. Location and Survey is also responsible for providing the right-of-way maps for the acquisition of property for widening roadways. Another responsibility is aerial photography. Aerial photography is provided for tasks such as Department court exhibits, project planning, and drainage maps for design and environmental studies. .

The mission of the project management section is to institutionalize a culture and govern resources to manage DOTD projects in such a manner as to maximize efficiency, value, and quality while minimizing their associated costs and risks.

4. **Construction.** The Construction Section provides construction support for the Operations Office; conducts fabrication inspection of bridge components; processes change orders, partial estimates, and all final audits of construction; and supports

work zone safety.

5. **Contract Services.** The Contract Services section includes the units of Consultant Contracts, Project Control, and Contracts and Specifications. The services provided by these units include consultant contract preparation, construction proposal preparation, specifications preparation, construction contract preparation, and construction lettings.

6. **Public Works and Water Resources Program.** The responsibilities of the Public Works and Water Resources Program section include statewide regulation and oversight of the design, construction, and/or modification of existing and future dams. DOTD is required to inspect 555 regulated dams to ensure conformity with established safety regulations. DOTD is also responsible for the repair and maintenance of 20 state-maintained dams and the preparation and updating of Emergency Action Plans (EAP), and Table Top Exercises at the dam sites**.** The section provides oversight for all Non-Coastal Levee Districts to ensure they inspect and report the condition of their levees to the US Army Corps of Engineers (USACE) on a quarterly basis, as required by FEMA. The section also provides a statewide reservoir development and construction priority program funded through the State Capital Outlay Bond Program. Administering the Statewide Water Resources Co-op Program consists of collecting water data on a systematic basis for structural design, water supply, reservoir and drainage management, water availability and use, and conducting interpretive hydrologic studies, modeling, and development of water supplies. The Flood Plain Management Grant Program is administered to comply with FEMA's Flood Insurance Program Rules and Regulations. The section coordinates the Statewide Flood Control Program to help communities with flooding problems that exceed their financial capacity. The Levee Permit Advisory Program provides advice and recommendations to Louisiana Levee Districts concerning activities near levees that could affect their structural integrity. The section also participates in large water resources civil construction projects through a partnership with the US Corps of Engineers.

7. **Environmental.** The section is responsible for environmental planning, analysis, and documentation in accordance with the National Environmental Policy Act (NEPA). It is responsible for Stage 1 of the project delivery process, which includes compliance with NEPA and many other environmental laws, rules, and regulations. The Environmental Section is also responsible for obtaining some of the federal and state

permits required to construct DOTD projects including bridge permits, wetland permits, coastal use permits, scenic stream permits, etc.

Office of Operations. The Office of Operations manages all district, maintenance, Intelligent Transportation System (ITS), and Crescent City Connection Division activities in the Department. On December 31, 2011, 3,550 employees were employed within this Office although only 1,148 were in technical positions and 351 in administrative positions. A large portion of those employed in the Office of Operations are artisans (carpenters, welders, plumbers, and others who practice a trade); equipment operators; laborers; highway foremen; marine deckhands; lock operators; marine toll collectors; marine engineers; guards; and police officers.

1. **Maintenance.** The Maintenance section manages the statewide maintenance sections (Sections 42, 45, 50 and 51); administers the statewide emergency operations unit; and administers the headquarters operations business office. Individual sections within the Maintenance section are:
    a. Section 06: Building and Grounds. This section is responsible for: overseeing the facility and building maintenance for DOTD Headquarters complex (this includes the operation of the physical plant including all heating, ventilation, and air conditioning equipment, all stand-by generators, pumps, cooling towers, boilers, chillers, etc.); general maintenance, repairs, plumbing etc. throughout the headquarters complex, including Airport and Foss Drive Locations; all general carpentry work, walls, doors, and building furniture such as desks, tables, cabinets, etc.
    b. Section 42: Maintenance Management. Responsible for the Agile Assets program operation, Contract Maintenance Program, central repair shop, statewide equipment crews, the statewide equipment unit, facilities and roadside management, Adopt-A-Road Program, Wildflower Program, Rest Area Program, Enterprise Rent-A-Car Program, Headquarters' buildings and grounds (Section 06), and property management.
    c. Section 45: Traffic Services. Responsible for statewide signal construction and major repairs, interstate sign maintenance, sign fabrication, outdoor advertising, logos, pavement marking/sign construction QA/QC and warehouse operations.
    d. Section 50: Loss Prevention. The DOTD Loss Prevention Section coordinates the Office of Risk Management yearly audit; assesses complex risks; provides technical assistance; evaluates current loss

prevention policies, processes, and training requirements; and recommends corrective action in order for DOTD to be in compliance with the state's safety and loss prevention program and prevailing federal regulations and standards.

e. Section 51: Bridge Maintenance and Inspection. Administers the operation of three ferry operations (Plaquemine, White Castle, and Reserve); administers the ferry maintenance unit, which is responsible for all major repairs to all seven ferry locations statewide; manages statewide bridge crews, including the bridge replacement/repair crew and water crew which mainly repairs damaged fender systems; administers the electrical/mechanical Maintenance unit, which does work on movable bridges, pumping stations, tunnels, and assists in some facility repairs; administers the statewide bridge inspection program, including a QA/QC Bridge Inspection unit.

2. **Section 56: Intelligent Transportation Systems.** Responsible for implementing the statewide Intelligent Transportation System (ITS) and Traffic-Incident Management (TIM) Programs, with the goal of improving safety and traffic operations and informing the motoring public on traffic conditions. Specifically, these programs involve the planning, design, construction and operation of real-time advanced traffic management and traveler information systems, transportation management centers, and roadway safety and incident patrols.

3. **Sections 20, 59, 70: Crescent City Connection Division (CCCD) & Louisiana Toll Authority.** Responsible for administration, maintenance, construction, design, and traffic for the Crescent City Connection Division. This includes the ferry operations for three routes, policing of the CCCD bridges and roads within its jurisdiction, toll collection efforts, maintenance of the lighting, maintenance of the facilities and landscaping. Also responsible for the toll collection operations of the La. 1 toll facility.

4. **Districts.** DOTD has nine district offices that cover the state. Each district office is headed by a district administrator and the district is responsible for all construction, maintenance, and operation of state transportation facilities in their jurisdiction with assistance from DOTD Headquarters in Baton Rouge. The location of the individual district offices are listed below:
    a. District 02: New Orleans

b. District 03: Lafayette
c. District 04: Shreveport
d. District 05: Monroe
e. District 07: Lake Charles
f. District 08: Alexandria
g. District 58: Chase
h. District 61: Baton Rouge
i. District 62: Hammond

Literature Review

Introduction

The literature on this topic was identified from reports, audits, papers, and personal communication with those closely associated with the topic. The literature constitutes studies not only from the US but also from international sources. The literature review is divided into two sections: privatization in the United States and privatization in other countries. The literature contains much information concerning outsourcing and privatization practices chiefly related to: methods of cost comparison between DOTs and consultants, arguments for and against outsourcing, drawbacks in the present system and ways in which they can be overcome, and trends in outsourcing in the US and internationally.

Privatization in the United States

Cost Comparison Studies. Presented below are highlights from two cost comparison studies.

Center for Transportation Research Study, Austin (Persad, 2009).

The Center for Transportation Research (CTR) conducted a statistical analysis of preliminary engineering (PE) and construction engineering (CE) costs for Texas Department of Transportation (TxDOT) construction projects let in fiscal years 2006 through 2007. Projects were classified as either fully in-house (no consultant charges) or mixed (in-house and consultant charges). Stepwise regression analysis was used to find out whether PE and CE costs varied between in-house and consultant, across project types, by project cost, and across districts. The data set consisted of 1,832 projects.

It was found that PE costs were lower for in-house projects for the usual range of project size across all districts. Also, in most districts, average in-house projects exhibited a lower

percentage of CE costs than in the average mixed project. However, more complex projects are generally outsourced which would have an impact on the results of the analysis.

Polytechnic Institute of NYU Study (Griffis, 2008).

The Polytechnic Institute of New York University (NYU) analyzed the relative cost of conducting state government work in-house versus by consultant. To estimate in-house engineers' costs, researchers used the weighted average direct salary of in-house engineers while accounting for more paid days off and less working hours per week when compared to consultants. Fringe benefit rates of 45.53% and an indirect cost overhead rate of 149% were used. The former was obtained from the New York State Office of the Comptroller's Accounting Bulletin A-578 for the fiscal year 2007–2008 (State of New York Comptroller, 1998) while the latter was published in the Annual Indirect Cost Rate Proposal submitted to the Federal Highway Administration (FHWA). The average annual cost of an in-house Design Engineer was estimated to be $185,414.

To estimate annual cost of a design engineer in the private sector, investigators took a sample of nine firms in New York and computed the average direct salary of a design engineer, added 27.87% for fringe benefits, and an overhead rate used exclusive of fringe benefits of 124.63%. Complexity of the project was taken into consideration. A profit margin of 10% was used. The resulting cost of a design engineer in the private sector was estimated to be $162,829.

Higher in-house costs were attributed to generous benefits, the large amount of paid time off, and a reduced workweek of in-house design staff. In addition, the pension plan of the DOT employees was costlier than the consultants. If this were to be included in the calculations in this report, an additional $5,500 could be added to the expected annual salary.

There was considerable variability in the estimates used to determine the in-house design costs, so a probability assumption was made for each major factor involved in the calculation. The analysis conducted by the researchers showed that, based on the assumptions made, there is about an 80% assurance that the real cost to the taxpayer is between $166,151 and $214,695, and has an expected value of $185,361. The lower value is still slightly greater than the expected cost to the taxpayer of a consultant design engineer ($162,829). However, the cost of administering a private contract with a consultant was not taken into account.

Reasons for Outsourcing

According to a National Cooperative Highway Research Program (NCHRP) Synthesis study, most outsourcing commissioned by state DOTs was not motivated by cost considerations (Warne, 2003). Staff constraints, schedules, skill requirements, and workload were the main

reason for the decision to outsource (Warne, 2003). From this study and others, the main arguments for outsourcing state DOT functions are listed below:

Staff constraints and specialty requirements. They were found to be the most often cited reasons to outsource work in state DOTs (Warne, 2003; Witheford, 1997). The NCHRP Synthesis 313 survey, which included 38 participating states, recorded percentage of activities within each of the activity groups which revealed that these two factors carried more weight for all activities and their influence is very noticeable with regard to construction and design outsourcing. Both of these factors together accounted for 71%, on the whole. On the other hand, for these two activity groups, i.e., design and construction, cost had the least influence in making a decision to outsource (Warne, 2003). Two GAO studies cite, along with these two reasons, the need to maintain flexibility to manage variations in the workload (GAO, 2001; GAO, 2008).

Improved efficiency and cost savings. Some studies claim that contracting out improves government's efficiency and is cost effective (Boyne, 1998; Domberger and Jensen, 1997). Another study suggested that outsourcing not only helped handle peak workloads without the public agency needing to increase their staff size, but it also provided improved quality and timeliness (Sheldon and Gordan, 2007).

Smaller government. There is a perception that government that governs least governs best. This point of view seeks to minimize the monopoly role of government in public sector functions and allow private enterprise to establish efficiencies through open competition (Buchanan and Tullock, 1965; Ostrom and Ostrom, 1977; Niskanen, 1971; Mueller, 1989; Tullock, 1971).

Qualifications. With regard to the qualifications of consultants, the private sector has the capacity to retain specialists while individual public agencies do not (Osborne and Gaebler, 1992; Savas, 1987; Thompson and Elling, 2000).

Political mandate. Some legislatures mandate greater use of consultants on the belief that it is beneficial to do so (Ugboro et al., 2001).

Better service and bureaucratic hindrances. Some argue that as private sector firms can be penalized if their service is of poor quality, this is an incentive to perform better. No such penalty exists for government (Kakabadse and Kakabadse, 2001). In addition, contracting out enables the public managers to bypass bureaucratic constraints that would apply if they themselves provided services directly (Schmidt, 2003, p. 308).

Innovation. Governments can benefit from innovation generated by the private sector as they try to complete a project in the most cost-effective manner (Pattenaude and Landis, 1979; Baty et al., 1971; Gray, 1989).

Core functions. It is argued that outsourcing government functions allows public managers to focus on their organization's core functions (Brown and Potoski, 2003; Van Slyke and Hammonds, 2003b; Avery, 2000; Kakabadse and Kakabadse, 2001).

Other Reasons That Lead to Outsourcing

In a study commissioned by the National Association of State Highway and Transportation Unions (NASHTU) (Kusnet, 2007), it is suggested that as DOTs' budgets tighten, state officials are under pressure to freeze or even cut their engineering and technical staff. By contracting out, state DOTs can claim to be reducing their workforce (Kusnet, 2007). John Barton, TxDOT's assistant executive director for engineering operations, states that the Texas legislature wants to use private contractors and consultants to the greatest extent possible (Dexheimer, 2009). Furthermore, the NASHTU study found numerous examples of politically connected companies receiving state contracts, often after donating large sums of money to political campaigns of the same public officials who approved the agreements. Examples are reported in New Jersey, Wisconsin, Ohio, Indiana, and Connecticut (Kusnet, 2007).

As DOTs move toward increased outsourcing, private consulting companies perform an ever-larger share of the work – particularly, the most interesting assignments – and employees within state Departments have less reason to continue working for the state and greater incentives to work for private firms. This causes a brain drain in DOTs and a loss in capability to perform the functions of quality control that they are required to perform. Subsequently, contracting-out generates even more contracting-out, which is a vicious cycle and the situation is exacerbated year by year. To counter the negative aspects of this, the NAHSTU study suggests in-house staff should specifically be given some challenging and interesting projects as well.

As state and local transportation Departments lose professional staff, they lose the capacity to supervise and inspect major projects. In this case, private companies must be hired to not only perform design and engineering work but also to inspect, supervise, and even manage entire projects conducted by other consultants. To have consultants supervise other consultants is a less than desirable situation (Kusnet, 2007).

Private firms might not work in the best interest of the public. In the "Big Dig" project, all engineering functions were outsourced (engineering, design, inspection, supervision, and management) and yet the public was not well served. The project's cost increased from the original estimate of $2.6 billion to $14.6 billion and fatal accidents resulted from improper design in an effort to save money by compromising on quality and safety. Along similar

lines, the Los Angeles' Red Line subway was plagued by problems including sinkholes in the streets, fraudulent inspections, and 60% more injuries among its construction workers than the national average for such projects, reportedly due to outsourcing (Kusnet, 2007). To ensure public interest, DOTs must have sufficient tools and procedures in place to select, monitor and oversee contractors to ensure the public interest is protected.

Trend in the US in Outsourcing: Past, Present and the Future

A study conducted in 2003 and reported in *NCHRP Synthesis 313* (Warne, 2003), reports on a survey to trace the trend in outsourcing in the US by decade beginning in the 1950s and extending to 2000. The data for the number of new activities outsourced in each decade is shown in Table 1. The table shows an increase in the number of new activities outsourced each decade with a sharp rise in the last two decades.

Table 1
New activities outsourced in each decade since 1950

Activity Group	1950–59	1960–69	1970–79	1980–89	1990–99	2000–02
Administration	0	1	6	3	21	11
Construction	3	1	2	8	9	5
Design	4	6	16	21	14	8
Maintenance	16	9	24	23	33	2
Operations	13	5	6	13	27	7
Planning	4	7	9	22	31	5
Right-of-way	7	10	16	21	31	11
Total Activities	47	39	79	111	166	49

In 1999, half of state DOTs contracted out 50% or more of their preconstruction engineering. Ten years prior to that, only 20% of states contracted out that amount. Correspondingly, the number of states doing 80% or more of their preconstruction engineering in-house dropped from more than half to approximately 17% (Witheford, 1999).

From 1998 to 1999, the first years of the TEA21 (Transportation Equity Act for the 21st Century) appropriation program, contracting out increased from 35% to 42% of state preliminary engineering expenditures. In several major states, the use of consulting engineers has increased exponentially, particularly in New Jersey and Texas (Kusnet, 2007).

Privatization in Other Countries

This section of the literature review describes the privatization experiences of five countries, New Zealand, Australia, Canada, Sweden, and Finland. The impetus behind privatization and the conditions prevailing when privatization was introduced are presented in this section.

Also discussed are the results or impact of privatization. While New Zealand used radical reforms to privatize its road sector, the other countries followed more traditional approaches to achieve privatization goals.

New Zealand's Experience. New Zealand is unique in that it privatized many of its public sector Departments, including the transport Department, using radical reforms that no country has ever tried before. The New Zealand reforms, introduced in the 1980s, were inspired by the move to privatization in the United Kingdom during the Thatcher years and the poor economic conditions in New Zealand at the time (Bryson and Anderson, 2007).

The reforms introduced in New Zealand can be divided into two distinct time segments. Reforms introduced between 1984 and 1994 and the reforms introduced post 1995 (OECD 1999). The drivers of reform were different during the two periods as well as the pace at which they were implemented. The period from 1984 to 1994 can be characterized as a period of rapid implementation of radical change, while the post 1995 period was a period of slower-paced evolutionary change (OECD, 1999).

A variety of factors contributed to the reforms initiated in the1984-1994 period. The factors included a constant decline in the economic state of New Zealand starting in the mid 1950s, a constitutional and foreign exchange crisis, increasing unemployment, slow growth in Gross Domestic Product, increasing government debt as a percent of GDP – from 9% in 1976 to 41 percent in the mid 1980's and, finally, a failure of the economic and interventionist policies of the pre-1984 governments (OECD, 1999). Along with the factors mentioned above, other factors also contributed to the introduction of reforms as discussed in detail elsewhere (OECD, 1999; Schick, 1996).

The reforms of 1984-1994 were enacted by progressively introducing legislation that achieved specific goals (OECD, 1999; Bryson and Anderson, 2007). These were the State Owned Enterprises Act of 1986, the State Sector Act of 1988, the Public Finance Act of 1989, and the Employment Contracts Act of 1994.

The primary purpose of the State-Owned Enterprises (SOEs) Act was to separate central government functions from other government and quasi-government functions and to corporatize the public sector (Bryson and Anderson, 2007). As such, the SOE act provided a platform for converting the old civil service government Departments into government-owned corporations. The newly established SOE's were required to operate as corporations with the objective of making a profit. Similar to corporations, SOEs are governed by a Board

of Directors who are accountable for commercial performance to the government as the sole shareholder. Introduction of the SOE Act was the first step towards privatization and an implicit objective of the Act was to prepare SOEs for sale (Bryson and Anderson, 2007).

The State Sector Act was the second and most important phase of reform in privatization of SOEs. The act imparted more powers to chief executives of individual Departments (OECD, 1999; Bryson and Anderson, 2007). The act made the chief executive of each individual Department the employer of the Department's staff with the authority to appoint and dismiss employees. It also changed the role of the State Service Commission (SSC) from employer and manager of all public service employees to employer of chief executives of the SOEs only (OECD, 1999; Bryson and Anderson, 2007). In addition to being the employer and manager of staff in the SOE, the chief executive is responsible for all functions and duties of the SOE, giving advice to ministers, maintaining the general conduct of the organization and, for the efficient, effective, and economical management of the SOE (Bryson and Anderson, 2007).

The Public Finance Act was enacted in 1989 to change the foundation of the state sector financial management system. The Public Finance Act along with State Sector Act work in unison to allow the government to appropriate money for a desired outcome. For example, if the government wanted a road with low roughness index and fewer accidents, then money could be appropriated to finance the inputs or resources like labor, physical resources, engineering expertise, and so on to produce the desired outcomes. In addition, the act introduced a new and more transparent financial reporting and management system, together with improved accountability mechanisms that allowed government and parliament to monitor performance (Bryson and Anderson, 2007).

Soon after the passage of the State Sector Act, chief executives sought a more flexible labor market and enhanced management power over the relationships with unions and employees in carrying out their functions. Consequently, the Employment Contract Act was passed in 1991 that provided a legislative environment for chief executives to influence collective bargaining rights of employees. The act was effective in abolishing the previous system of collective bargaining and replaced it with one of enterprise-based bargaining. In addition, the act significantly individualized and de-unionized most of the New Zealand workforce.

The State Owned Enterprise established for transport in New Zealand is the New Zealand Transport Agency (NZTA). It is responsible for the safe and functional operation of all land transport in the country. The organizational structure of the NZTA is shown in Figure 2. The

State Service Commission appoints the chief executive of NZTA through a contractual arrangement. The chief executive oversees NZTA and appoints all group and regional managers. The Minister of Transport in New Zealand enters into a contract with the chief executive to purchase all road-related services and the chief executive is then responsible for delivery of all services specified in the contract.

The NZTA currently employs approximately 1,372 full time equivalents (FTEs), and uses a range of outsourcing and contracting-out arrangements for the provision of services. NZTA manages New Zealand's 10,984 kilometers of state highways and has an operating budget of $250 million (SSC, 2011).

The government in New Zealand has not conducted any formal evaluation of the success of its privatization experience. This is largely due to the difficulty of knowing what conditions would have been like if the path to privatization was not followed, but it is also due to the fact that most of their effort has been placed on implementing the system they adopted and they do not wish to speculate on what might have been. However, some evaluations have been conducted as reported in the following paragraphs.

Robin Dunlop served as Chief Executive Officer of NZTA from 1989 to 2004 and has published a paper describing the positive aspects of public sector reform in the road sector in New Zealand (Dunlop, 1999). He reported that the road sector made large efficiency gains by keeping both user charges and fuel tax almost flat between 1989 and 1998 despite general inflation of 27 percent during that period. Additionally, he reported that the road sector achieved a savings of 17 percent annually from 1988 to 1999 in state highway maintenance, and reduced the cost of professional services by 30 percent by contracting out. All of the improvements were achieved while maintaining a constant improvement in performance measures in road roughness and accident rate. The only disadvantage reported with the new system of road administration was the lack of a good training environment for newly recruited highway staff.

Allen Schick, a Professor of Public Policy in the School of Public Affairs at the University of Maryland, and a Visiting Fellow at the Brookings Institution in Washington D.C., was invited by the New Zealand government to assess the effectiveness of reforms introduced in the public sector in New Zealand and reported them in a series of papers (Schick 1996; Schick 1998; Schick 2001).

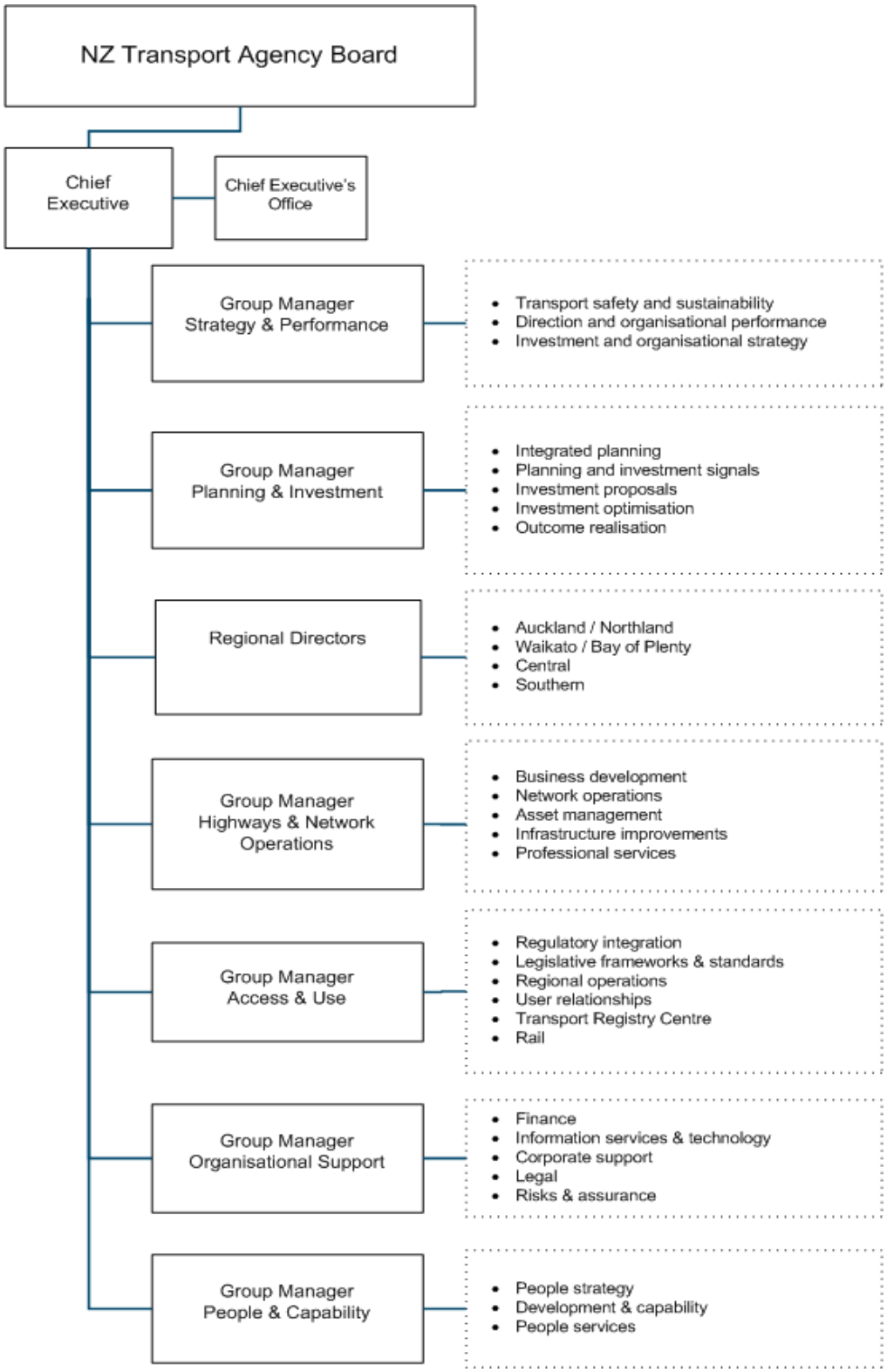

Figure 2
Organizational structure of NZTA

Schick (1998) notes that reforms introduced in New Zealand have replaced traditional public administration with contract-like relationships between government ministers and public sector Departments. Ministers play the role of purchaser while public Departments function as suppliers. Under the new contract-like system, ministers can purchase services from government Departments or from any alternative public or private supplier.

Schick says the major positive impact of reforms was an overall improvement in efficiency of organizations throughout public sector Departments. At the same time he also argues that overall improvement in efficiency came at a price, as discussed below:

1. Schick suggests that establishing contractual relationships has weakened the traditional values that are attached to public service. For example, personnel serving in public service take pride in serving the public, show professionalism, and feel highly responsible for their own actions. However, service-oriented values tend to disappear when a contract-like relationship is established and greater profits can be realized by doing less.
2. Schick also suggests that contract-like arrangements do not provide government with an exit option that is vital to the effectiveness and enforcement of private contracts. For instance, in the New Zealand model, the government often enters into a contract with one of its own Departments. If the Department fails to perform, the government can at the most dismiss the chief executive but does not have the option to terminate the entire contract and appoint another company or Department because there usually are no alternative organizations to appoint.
3. Establishing and managing contracts is expensive.

Australia's Experience. Australia introduced its own set of reforms and legislation to introduce privatization into the road sector in the early 1980s and then again in the early1990s (Standing Committee, 1996). Primarily, it initiated competition into road sector by using three separate mechanisms: competitive tendering for design and construction contracts, introduction of the build-own-operate-transfer (BOOT) project delivery method, and tendering for maintenance contracts. Both government and private contractors may bid although government agencies are required to account for all the charges that a private contractor incurs while coming up with their bid amount. The government decides which projects will be let and which projects are retained for in-house execution.

Most states in Australia outsource their road maintenance work on contracts of 3-10 year duration and most states report a positive experience with the arrangement (NSW, 2000).

As regards further comment on the experience in Australia with privatization in the transport sector, the authors were able to establish contact with Maxwell Gordon Lay, a past chief engineer with the Victoria Roads Department who has first-hand experience of the privatization initiative in Australia and reported the following:

Design: Over the last 20 or so years State road agencies have progressively outsourced more of their design to consulting engineers, who have grown in skill and size and often employed many of the best ex-government engineers. The results have generally been very good, the designs are innovative and competition has kept the prices relatively low. The State agencies have generally tried to retain some core skills in such central areas as preliminary road design, traffic operations, bridge loadings and use of local materials for pavements. To date the process has been quite successful. However, as time passes, it has become increasingly difficult for the Agencies to nurture and develop such skills in house.
Construction. This has been almost totally out-sourced. Contractors are skilled and capable and competitive and the process has been very successful. In particular, there have been many successful examples of design and construction contracts which have delivered innovative outcomes far better than those envisaged in the original Agency design.
Maintenance. There was more reluctance to outsource maintenance and some Agencies still keep major maintenance teams. However, maintenance contractors are now sophisticated and effective. This has been helped by the development of contractual tools to specify maintenance needs and measure the performance outcomes. Australian roads are generally of much lower construction cost than US roads and rely more heavily on routine and preventative maintenance. Thus maintenance contracting is particularly important.
General. Outsourcing to the private sector has been a success in Australia and I don't think anyone would consider reversing the general trend.

Canada's experience. Canada privatized its transport sector after learning from the experience of New Zealand and other countries. Experience in the state of Alberta is reviewed below as an example of privatization in Canada

The Alberta Transportation and Utilities (AT&U) Department was restructured in 1995 as part of the government's plan to reduce the size of the public sector. In 1992-93 the Department had just less than 4,000 employees. Restructuring reduced the number of employees to 761 by 1998/99. Prior to restructuring, the organizational structure was defined by facility type so that employees worked in, for example, the bridge unit, or the road unit etc., but after restructuring units were established by function such as by design unit, maintenance unit, etc. The rationale was that starting anew would minimize resistance

(Rastin, 1999). Even the term “engineering” was removed from division names to break down the culture of the engineering group that was strong and thought to be an impediment to change. This did result in some estrangement and lack of communication but later adjustments relieved the problem.

In the new setup, emphasis was given to employee qualifications beyond technical knowledge and skills, such as the ability to work in teams, lead, provide client focus, and have strategic understanding of things to keep the organization on the leading edge. They stopped hiring fresh graduates and preferred engineers and technicians with a minimum of 5 years of experience. The organization emphasized the importance of training as they thought that it was required for the restructuring to be successful. An average of $1000 (Canadian dollars) was allocated per employee per year for training and more money was provided if needed. Lateral movement within the organization was encouraged as it was seen as a way to expand and maintain skills. Another concept that was introduced was to assign employees as project manager on a project-by-project basis but to let the employee revert to their normal position during the periods in which they were not functioning as a project manager. This allowed employees more opportunity to gain management experience than they had in the previous Departmental structure.

Performance measures were developed to ensure that outsourcing of engineering design was assisting the Department to meet its goals. They had targets set up for each year starting with 1996/97 and it was termed successful if they reached their targets. Data in Table 2 shows the first year after restructuring; it is compared to the previous year on eight performance criteria. Improvement was observed on all performance measures, although goals were not met on all items. A clear improvement in cost is apparent.

Sweden’s experience. In the early 1990s, poor economic conditions in Sweden provided the impetus for liberalization of the transport sector (Jong, 2003). The idea was to allow any company capable and willing to provide civil engineering functions to the state to be able to do so. In 1992 the agency began to award four-year maintenance contracts to bidders with the best combination of low price and high quality. The Swedish Road Administration was allowed to compete with private firms but a plan to split the agency into an independent authority responsible for the tendering process and another into large road maintenance enterprise that would compete with private companies was opposed by the labor unions and defeated in parliament. Private companies accused the Swedish Road Administration of cross-subsidization between its various divisions and lack of transparency in the tendering process. The Swedish Road Administration registered financial losses in

2000 and 2001 charging collusion and cartel-formation among private companies. Cost savings of approximately 20 percent were realized but trust in fair and open tendering had suffered and eventually the Swedish model of road management liberalization was aborted.

Table 2
Performance measures for Alberta, Canada 1996/1997

S. No.	Performance Measure	Comments
1.	Total design cost as a percentage of total project cost	Success – decreased from 15.8% to 10.3%.
2.	Number of redesigns within 10 years of construction	Success – decreased from 6.9% to 1.2%.
3.	Cost increases due to design deficiencies (addenda)	There was slight improvement but the target was not achieved.
4.	Cost increases due to design deficiencies (unit price approvals)	
5.	Collision rate exceeding provincial average for roads and bridges.	Success – Drop from 74 to 63.5 (for every 100 m vehicle-miles)
6.	Difference between design estimate and tendered amount	Failure – no improvement found
7.	Percentage of design projects delivered on time	Failure – only 64% while the target was 100%.
8.	Performance evaluation ratings by stakeholders	Success – 100% satisfied.

Finland's experience. The Finnish government learned from Sweden's experience (Pakkala, 2002). The Finnish Ministry of Transport and Communication was able to prevent opposition from labor unions and employee organizations but private companies were hostile to the idea. Policy makers used the Swedish experience to prepare their liberalization legislation. The road agency was split into two organizations: the Finnish Roads Administration which was responsible for administration and open tendering, and the Finnish Roads Enterprise, a public limited company which conducted actual maintenance and competed with the private parties. Finnish Roads Enterprise was required to offer services in all the regions to prevent any of them from not being served.

The labor unions prevented any Road Enterprise employee from being dismissed in the first five years following introduction of the liberalization of road transport in Finland. Any employee in this position was funded from public funds specially allocated by the central government. In the first year of open bidding (2001), Finland achieved 20% cost savings. However, private companies complained that their profit margin was too low, and that the

small short-term contracts that were offered limited innovation. As a result, contracts were awarded for larger areas and for longer periods.

Soon after introduction, the Finnish Roads Administration introduced a tendering procedure in which bids were evaluated by independent experts to ensure a fair and impartial process. Each bid was evaluated on the basis of price (75%) and quality points (25%). Of the latter, quality was measured by: (1) reputation and quality of the bidding organization, (2) quality of the maintenance plan and (3) quality certificates with regard to safety, the environment and other aspects. Overall, the Finnish authorities consider their liberalization venture a work in progress.

Conclusions Drawn from Privatization in Other Countries

Different countries have used different approaches to privatize their respective DOTs. Of all the countries, New Zealand is the only country that radically reformed its road sector. On the other hand, while countries like Australia and Canada used more traditional forms of privatization, the objectives of reduced cost, greater accountability, and improved service were the same. Most studies report reduced cost, better delivery, and improved service but problems remain in creating free market conditions and public-oriented service.

Cost Comparison Methodology

Most studies comparing the cost of insourcing versus outsourcing in the past have conducted detailed analysis of the direct and indirect costs of the tasks involved (Witheford, 1999, Warne 2003, Schneider et al. 1998). One of the problems with this approach is that it is, firstly, dependent on establishing a reliable estimate of overhead costs in the public sector. This is notoriously difficult to accomplish since determining indirect costs at task level requires a level of accounting that is usually not available in the public sector. In addition, costs incurred in the public sector may be different to those in the private sector. For example, states typically self-insure and can impose limits on TORT claims whereas the private sector has to purchase liability insurance on the open market and does not have the ability to limit claims. Further, if state departments are charged rent on state buildings, the charge-out rates may or may not include maintenance costs or property tax, or the Department may assume responsibility for maintenance itself.

The second major problem with comparing insourcing and outsourcing costs at task level is inclusion of all relevant costs. For example, the cost of contract preparation and contract supervision is often left out of the comparison and yet it can add between 10 and 20 percent

to the cost of outsourcing, depending on the activity being outsourced (Schneider et al. 1998). Another more abstract issue is that state DOTs retain the responsibility for the safe operation of their transportation facilities whereas private sector organizations performing design or construction services for the state are only responsible for their professional competence in completing the design, or for the safe operation of the facility while under construction. The difference can be observed when TORT expenses of a state are compared with the typical liability insurance rates of private companies (Schneider et al., 1998, pp. 50-51) and it is seen that TORT payments are much larger than liability insurance payments for engineers.

Few studies have attempted to compare the cost of privatizing an entire professional activity like civil engineering in a state DOT. Given that it is the objective of this study to evaluate that very issue, the procedure described below has been adopted to accomplish that objective. In essence, the procedure compares the cost of performing all the civil engineering operations conducted in DOTD in one year with the estimated cost of conducting those same operations over the same period using the private sector. To accomplish this, the following assumptions are made:

1. Civil engineering personnel in the private sector are able to perform the same operations as public sector personnel at the same grade level. That is, the same level of professional expertise is required to perform the same tasks irrespective of whether the professional performing the task is in the public or private sector.
2. Public and private sector personnel take the same amount of time to perform the same task. That is, if a public sector employee takes *x* hours to complete a task, it will take a person of equal grade level in the private sector *x* hours as well. Note this applies to the time during which a person is actually involved in productive work and not time spent doing other things. Time spent on other activities (e.g. training, conferences, vacation, sick leave, etc.) raises the overhead rate by having proportionally more non-productive time.
3. The basis of comparison will be the cost of conducting all civil engineering operations conducted in DOTD in one year.

Using the assumptions listed above, the costs of conducting civil engineering operations in DOTD during the calendar year of 2011 will be estimated as follows:

1. In-house costs:
    a. Sum the salaries paid to all civil engineering staff in DOTD in 2011.
    b. Multiply the amount in 1(a) by the in-house overhead rate.

c. Sum values from 1(a) and 1(b) to provide the public sector cost of providing civil engineering operations in DOTD in 2011.

2. Private sector costs:
    a. Determine number of CE staff in DOTD by grade level.
    b. Identify equivalent grade levels in the private sector to those in DOTD (e.g. engineer grade 9 in DOTD = principal engineer in private sector).
    c. Assign the number of staff in 2(a) to the equivalent grade levels in 2(b).
    d. From audits conducted by DOTD among consulting engineers who conduct contract work for DOTD, determine the average wage rate ($/hr.) for each private sector grade level identified in 2(b)
    e. Multiply the number of persons in each grade level in 2(c) with the wage rate in 2(d) of each equivalent grade level and sum over the grade levels
    f. Multiply the total in 2(e) by an estimate of the number of productive hours that will be worked by the average private sector staff person in 2011. An estimate of productive hours is used because private sector companies apply their charge-out rate on billable hours (on cost-plus contracts) or estimate a fixed cost of the project based on the time required to complete each task in a project multiplied by the charge-out rate for all persons involved.
    g. Multiply the total in 2(f) by the private sector overhead rate, profit margin, and cost rate of preparing and managing the privatization contract.
    h. Add the values in 2(f) and 2(g) to provide an estimate of the cost of privatizing all civil engineering operations in DOTD in 2011.

Comparison of the values in 1(c) with those in 2(h) above provide an estimate of the comparative cost of providing civil engineering operations in DOTD using internal versus external staff.

Data Used in this Study

Data used in this study included employment information on DOTD employees for 2011. The data contained information on job title, grade level, unit, wage, and whether the appointment was full-time or part-time. As noted in the Scope and Objectives sections of this report, only employees performing civil engineering or closely related activities in the Offices of Multimodal Planning, Engineering, and Operations were considered relevant to this study. Employees in the Office of the Secretary and in the Office of Management and Finance, whether they were civil engineers or not, were not included in the analysis because they provide necessary management and oversight functions to civil engineering operations

within the Department such as policy formulation, quality control, financial oversight, and contract administration if civil engineering operations are privatized.

Since appointments are constantly being initiated and terminated, two “snapshots” of conditions on January 1, 2011, and December 31, 2011, were taken. On January 1, 2011, a total of 4,401 persons were employed in the Department and on December 31, 2011, the number was 4,491. Of these, 277 were in the Office of the Secretary or the Office of Management and Budget in 2011, and 281 were employed in these offices on December 31, 2011. Thus, the vast majority of employees in DOTD (approximately 93 percent) are in the three Offices that were analyzed (i.e., the Office of Multimodal Planning, Office of Engineering, and Office of Operations). Because there was very little difference in staff composition between the January 1 and December 31, 2011, only data from December 31, 2011, were used in the analysis conducted in this study.

Employees in the Offices of Multimodal Planning, Engineering, and Operations conduct a wide variety of activities beside traditional civil engineering design and construction. These include clerical, administrative, research, legal, medical, educational, security, service, aviation, marine, toll, and general labor activities. Those involved in civil engineering, or closely related activities, made up less than half of all the employees in the Offices of Multimodal Planning, Engineering, and Operations (1,631 of 4,210). This is discussed in greater detail in the Discussion of Results section of the report.

Classification of Positions

Job titles in DOTD are different to those typically used in private practice. In DOTD, technical positions include job titles such as engineering technician, project analyst, IT tech support, environmental impact specialist, roadside development district coordinator, engineering intern, engineer, surveyor, IT management, chief engineer, assistant secretary, special assistant, and executive director. In the private sector, the following job titles are used when DOTD contracts with consulting engineers on design projects: technician, senior technician, pre-professional, engineer, supervisor-engineer, and principal.

DOTD technical positions were reclassified into the categories of technician, senior technician, pre-professional, engineer, supervisor-engineer, and principal using information in the database as well as supplemental data further describing each job title. The classification of DOTD technical positions is described in greater detail in the Discussion of Results section of the report.

DISCUSSION OF RESULTS

Functions of DOTD that cannot be Privatized

Reviewing the operations conducted by DOTD in the previous chapter, it is apparent how comprehensive and diverse the operations of the Department are. All transportation modes are addressed (highway, aviation, public transportation, marine, rail, port, and pipeline), a wide range of facilities are served (roads, bridges, airports, rivers, levees, dams, rail lines, ports, pipelines, and buildings), and many operations are conducted (planning, evaluation, prioritization, design, construction, outsourcing, research, training, education, standards, regulations, monitoring, quality control, and response to queries from the public, legislature, or other state and/or federal agencies). Can all these operations be privatized, or are there some operations that by their very nature cannot, or should not, be privatized? This matter is discussed below.

First, preparing, evaluating, awarding, and managing contracts that privatize the civil engineering operations in DOTD is an operation that, we suggest, must be conducted in-house. The only alternative is to privatize that activity as well. However, the cornerstone of private sector efficiency is free and fair competition in the market place and this will be compromised if participants are referee one moment and player the next. This encourages collusion or resentment between participants. Worse, since the private sector is primarily profit driven, there is no mechanism to direct the overseeing organization to serve DOTD policies or impose quality control on the product. The only way to ensure that policies are pursued and quality maintained is by imposing it through another contract which would then have to be supervised again, thereby only extending the problem of effective oversight one more level.

Second, the establishment and maintenance of standards and regulations is an activity that needs to reflect the values of the public and be open to review, and there must be a mechanism to enforce their observance. This requires that they be developed and enforced by an agency that is answerable to the public through elected officials and has the authority to enforce compliance. To privatize such an activity would be virtually impossible.

Third, responding to queries from the legislature, public, and state and national agencies, is an activity that would be difficult to privatize because it involves being able to call upon any unit in the Department, integrate information from multiple sources in the Department, and,

in certain cases, retain confidentiality. Another aspect is the historical memory long-serving members of a state Department have that can assist in responding to queries.

Besides operations that cannot be privatized, there are those that can only be privatized with difficulty. Among these are operations established by law that do not lend themselves to privatization because of the way they are set up or the way they operate. For example, the Louisiana Revised Statute 34:3113 stipulates that the Louisiana Oil Terminal Authority (LOTA) in DOTD is responsible for environmental monitoring of the Louisiana Offshore Oil Port (LOOP) pipeline. LOTA contracts out the monitoring activity in a competitive bidding process every three years. LOTA is assisted in its oversight of the monitoring exercise by a committee. Privatization of this committee would require altering the law and would provide no savings as independent oversight will always be required and only two officials are paid to perform this activity in the existing arrangement (LOTA's Executive Director and Confidential Assistant). Another example is the Louisiana Transportation Research Center, which was established as a joint DOTD/Louisiana State University (LSU) entity in 1986 with specific operating rules and responsibilities related to DOTD and LSU (Louisiana Revised Statute 48:105). For LTRC to function as a private organization would require terminating the agreement with LSU or altering it entirely. The Tech Transfer and Education Center (TTEC) and DOTD Materials Lab currently operate under the supervision of LTRC, which complicates privatizing organizations that are interdependent.

Data Analysis

Among the 4,210 personnel employed in the Offices of Multimodal Planning, Engineering, and Operations on December 31, 2011, non-technical and part-time staff were excluded leaving a total of 1,631 full-time technical personnel in the data set. Part-time employees make up less than one-half of one percent of the entire workforce and since no information was available on how many hours each part-time employee worked (so that their cost to the Department could be estimated), they were omitted from the cost analysis.

Classification of DOTD Positions into Private Sector Categories

In this study, DOTD job titles were mapped onto the private sector job titles used by DOTD in design contracts with consulting engineering firms. That is, DOTD positions in the data from December 31, 2011, were aggregated into categories of technician, senior technician, pre-professional, engineer, supervisor-engineer, and principal as shown in Table 3. Personnel were assigned to private sector position categories based on their grade level classification having the prefix "TS" (for technical staff) and their job title indicating that they were either

an engineer, engineering intern, technician, or other professional performing work closely associated with civil engineering such as a surveyor, IT tech support personnel, project manager, environmental impact specialist, or roadside development manager. When job titles were ambiguous, such as “roadside development manager” or “project manager”, job descriptions were obtained from Louisiana’s state employment website to establish the nature of the job (LA Careers, 2012).

Wage Rates

The average wage rate for DOTD technical employees were calculated in terms of the classification scheme shown in Table 3. This was done by summing the annual salary of employees in a particular category and dividing by the number of employees multiplied by 2,080 (representing the number of hours in 52 weeks of 40 hours/week). The average wage of DOTD personnel obtained in this way is shown in Table 4. The average wage rates of technical staff in the private sector in Louisiana were obtained from audits DOTD conducts among consulting engineering firms who perform contract work for DOTD. The audit results used in this study were from 53 audits conducted in August 2011 and February 2012, thus representing the same time period for which the wage rate of DOTD employees were estimated. The estimated wage rates are shown in Table 4.

Table 3
Equivalency of public and private sector technical positions

Private Sector Position	DOTD Position		Number of DOTD technical employees (12/31/2011)
	Grade level	Job title	
Technician	TS 302, TS 304, TS 306-310	Engineering Technician 1-4, Project Analyst 1, IT Tech Support Specialist 1, IT Geo Support Analyst, IT Geo Assistant Support Analyst, Environmental Impact Specialist 1,2, and IT Tech Support Analyst 1 and 2	587
Senior Technician	TS 310, TS 311 TS 312, TS 313	Engineering Technician 5, 7, and DCL, Environmental Impact Specialist 3, Roadside Development District Coordinator, IT Tech Support Specialist 2 and 3, IT Geo Senior Support Analyst, and IT Geo Support Analyst	492
Pre-professional	TS 310, TS 311, TS 314	Engineer Intern 1, 2, Engineer Intern Applicant, Project Analyst 2	126
Engineer	TS 312-317	Engineer 3-6, Surveyor 4-5, Project Manager, DOTD Location and Survey, Environmental Impact Manager 1,2, and Environmental Impact Specialist DCL	300
Supervisor - engineer	TS 315, TS 318, TS 320, TS 321, UNCL-REG	Engineer 7, 8, IT Management Consultant 2, and DCL, IT Tech Support Supervisor, Staff Coordinator, Director Emergency Services, Coordinator, Contract Officer, Confidential Assistant	109
Principal	TS 321, TS 323, UNCL-REG	Engineer 9, Chief Engineer, Assistant Secretary UNCL, Special Assistant UNCL, Executive Director UNCL	17
		Total	1,631

Table 4
Wage rates in DOTD and private sector

Position	Wage rate ($/hr)	
	DOTD	Private sector
Technician	17.67	20.03
Senior Technician	25.79	31.8
Pre-professional	24.73	29.19
Engineer	39.21	47.55
Supervisor – engineer	48.43	58.73
Principal	56.77	75.51

Overhead Rates

Overhead rates include indirect costs and benefits. For DOTD, a study conducted by MGT America in June 2011 provided some of the information necessary to estimate an overhead rate for the Offices of Multimodal Planning, Engineering, and Operations combined. An overhead rate for these three Offices was estimated by taking the total operating costs of DOTD, adding an apportioned cost of the operating costs of other state Departments according to the Statewide Cost Allocation Plan (SWCAP), subtracting direct costs incurred in the Department, and dividing the result by the total wages in the Offices of Multimodal Planning, Engineering, and Operations. An Excel spreadsheet documenting estimation of the overhead rate is posted together with a copy of this report on the LTRC website on the publications page. The resulting overhead rate for DOTD from the analysis was found to be 182.01%.

The overhead rate for the private sector is estimated on a continuing basis through audits conducted by DOTD staff of consulting engineering firms performing professional contract work for the Department. From 53 firms audited in 2010, the overhead rate was found to be 161.68 percent of the wages, while seven firms audited in 2011 produced an average annual overhead rate of 170.53 percent. According to the staff conducting the audits, they felt the average overhead rate obtained in 2010 was more reliable than the 2011 value, so an overhead rate of 161.68 percent of wages was adopted in this study.

Contract Preparation and Supervision Costs

When work is contracted out by an agency, costs are incurred in preparing the contract, advertising it, evaluating the bids, awarding the contract, managing its execution, and,

finally, ensuring the product satisfies the conditions of the contract. In this study, a contract will need to be established between the management portion of DOTD (i.e., the Offices of the Secretary and Management and Finance) and the private sector entity that takes over the civil engineering operations of the Department. This will be a new contract that will replace the current internal communication that takes place in the Department through the chain of command and achieves the same goal without a contract. Given the different objectives of public and private sector enterprise, a contract is necessary to unambiguously specify the product to be delivered and ensure that it is. The contract must also monitor progress and schedule payments.

The contract referred to above should not be confused with the contracts civil engineering staff in DOTD currently let and supervise. These are activities the private sector will be expected to continue to contract out if they take over the civil engineering operations of the Department. The cost of performing these contracting out activities is covered in the cost estimate portion of the analysis by the assumption that private sector personnel perform the same tasks as currently performed by civil engineering staff in DOTD. Thus, the current level of outsourcing will be maintained but managed by the private sector entity conducting the civil engineering operations for DOTD.

The literature suggests that the cost of establishing and monitoring contracts between the public and private sector organizations on major ventures such as the one investigated in this study, tend to be underestimated (Schick, 2001). It is difficult to obtain an estimate but one expert in outsourcing of Information Technology suggested that it is likely to be between 5 and 10 percent of the total contract cost (Hirscheim, 2012). However, this is dependent on what is being outsourced and the magnitude of the contract. In our case, the magnitude of the contract is in excess of $1b per year of which approximately 70 percent is for contracts currently let to the private sector as discussed in the previous paragraph. Note, this cost of contract preparation and supervision must not be confused with the cost of contract preparation and supervision of specific activities or operations in the Department as conducted by Schneider et al. (1998) for the design of roads and bridges for DOTD. In this case it is for all civil engineering operations in the Department including the contracting out of construction projects that tend to have lower supervision costs as a percentage of contract cost.

An estimate of the cost of producing and maintaining a working contract between the management portion of the Department and the private sector is established in this study by assuming that the task of preparing and administering the contract will be similar to the task

of administering the contract between DOTD and consultants on design projects. That is, the effort and detail involved in preparing a comprehensive contract involving all civil engineering operations in the Department is similar to the effort and detail required in contracting out a design project in proportional terms. Thus, the percentage of contract cost incurred in administering the average design project is assumed to apply to the total cost of privatizing all civil engineering operations as well. This estimate of the cost of contracting out all civil engineering operations in DOTD is derived as follows:

1. In fiscal year 2011, DOTD contracted out design projects to consulting engineers for a total design fee of $121,345,499.
2. The wages of staff in DOTD who prepared these contracts summed to $881,670 during fiscal year 2011. With an internal overhead rate of 182.01 percent of wages, the total cost of preparing the contracts is thus estimated at $2,486,392.
3. From a study conducted on the cost of contract preparation and contract supervision of road and bridge design projects in DOTD, it was found that contract supervision costs are roughly 2.5 times that of contract preparation (Schneider et al. 1998, pp. 62). Thus, the estimated cost of contract supervision is 2.5 x $2,486,392 or $6,215,980.
4. From (2) and (3) above the total estimated cost of contract preparation and contract supervision in fiscal year 2011 was $$2,486,392+ $6,215,980 = $8,702,372.
5. From (1) and (4), an estimate of the cost of preparing and supervising a design project as a percentage of contract cost is $8,702,372/$121,345,499 or 7.17% of the contract cost.

Cost Comparison

A cost comparison is made based on the cost comparison methodology described in the Methodology section. The estimated total costs of providing civil engineering operations in the Offices of Multimodal Planning, Engineering, and Operations in DOTD with internal staff for calendar year 2011 is shown in Table 5.

Table 5
DOTD cost

Cost item	Cost ($/annum)
Salaries	$92,055,863
Overhead (182.01%)	$167,550,876
Total	$259,606,739

In estimating the cost of providing the same service by the private sector, the charge-out rate of each technical position shown in Table 3 and Table 4 must first be established. The charge-out rate is the wage rate multiplied by 1 plus the overhead rate (i.e. That is, 1+1.6168 or 2.6168). If it is assumed that the average employee in the private sector is granted public holidays and vacation for a total of 4 weeks per year, and is able to bill 80 percent of the remaining time when they are at work, then in the 52 weeks in a year in which the standard work week is 40 hours, a total of (52*40-4*40)*0.8 = 1536 hours could be billed. Multiplying the charge-out rate of each position with the number of persons in that position as shown in Table 4 provides an estimate of the total labor costs for the private sector. However, DOTD permits a15 percent profit on labor costs on consulting and general contracts as described in the Department's Consultant Contract Services Manual section 2.6 (DOTD, 2007). In addition, the cost to DOTD of administering the privatization project (estimated at 7.17% of contract cost earlier) must be added to the cost of privatization.

Using the number of personnel in each position shown in Table 3 and the wage rates of private sector personnel in each position in Table 4, an estimate of the total cost of the private sector to perform the same work is shown in Table 6.

Table 6
Private sector cost

Position	Number of employees	Wages ($/hr)	Charge-out rate ($/hr)	Private sector cost ($/annum)
Technician	587	20.03	52.41	47,258,594
Senior Technician	492	31.80	83.21	62,886,000
Pre-professional	126	29.19	76.38	14,783,130
Engineer	300	47.55	124.43	57,336,809
Supervisor-Eng.	109	58.73	153.68	25,730,501
Principal	17	75.51	197.59	5,159,589
Total	1,631			$213,154,623
			15% profit	$245,127,817
			7.17% contract admin	$262,703,482

Observing the estimated cost of privatizing the civil engineering operations of DOTD shown in Table 6 ($262,703,482), it can be seen that it is very similar to the estimated cost of providing the services in-house ($259,606,739) shown in Table 5.

Non-Cost Factors Affecting a Privatization Decision

One finding of past studies investigating outsourcing of all kinds is the significance of non-cost factors in the outsourcing decision. For example, in the outsourcing of Information Technology (IT) it is common for factors other than cost to influence the outsourcing decision. In a nationwide survey among state DOTs in 2002, 38 responding states indicated that cost was a factor in the outsourcing decision in only 6 percent of the cases (Warne, 2003). This was well behind staff constraints (42%), lack of specialty skills or equipment (29%), or as a result of a policy directive (15%). This is supported by an earlier study conducted by Witheford among state DOTs in the mid 1990's (Witheford, 1997). He found cost was quoted as a factor in 8 percent of outsourcing cases, staff constraints in 40 percent, lack of specialized skills in 24%, and as a result of a policy directive in 22% of the cases.

In the case being investigated in this study, the activity being considered for outsourcing is an entire discipline area constituting a significant portion of the activities in a state Department. Thus, insufficient staff or a lack of internal specialty skills is no longer relevant. When privatization of major portions of traditionally public sector activities have been considered in the past, favorable non-cost factors expected to emerge from the decision to privatize have been:

1. More timely delivery of products. That is, quicker and better on-time delivery.
2. Greater delivery. That is, more products in the same time period.
3. Innovation and efficiency prompted by market competition.
4. Development of a more vibrant private sector.

Non-cost factors that do not favor the decision to privatize are:

1. Cost of administering the contract with the private sector.
2. Loss of technical expertise within the public sector agency, thereby reducing its ability to fulfill its responsibilities.
3. Loss of independent quality control of state projects.
4. Loss of interstate and federal collaboration and liaison opportunities (e.g., AASHTO, Peer Review Programs, FHWA participation in state programs, collaborative research).
5. Loss of confidentiality in internal matters.
6. In the case of privatization of a portion of an organization, such as in the case being studied in this report, disruption to the organizational structure and operation of the Department.

CONCLUSIONS

This study set out to investigate the impact of privatizing civil engineering operations in DOTD. The impact was assessed by comparing the cost of privatization to the cost of retaining the current system and then by estimating the non-cost consequences of privatization by studying the experience others have had who privatized operations.

The finding of this study is that the estimated cost of providing civil engineering operations with internal staff in DOTD during the calendar year of 2011 was $259,606,739. This was estimated from the wages and overhead of staff performing civil engineering operations in the Department during 2011. The estimated cost of providing the same services by the private sector for the same period was $262,703,482. This constituted the cost the private sector is estimated to charge to provide the services currently provided internally. Thus, no savings are expected from privatization of the civil engineering operations of DOTD.

Other studies have suggested that privatization of transport agencies leads to cost savings but they have not been able to prove it because once they privatized they were not able to determine what it would have cost if they remained a public institution. In New Zealand, a reduced trend in transport expenditure from past trends was reported but they were not able to quantify cost savings (Dunlop, 1999). In general, greater efficiency in product delivery is realized but they acknowledge there is a loss in an attitude of public service, that it is difficult to establish market competition because of the size of the operation and the limited number of organizations that can provide services at that level, and that it is expensive to establish and administer the contracts (Schick, 1996; Schick, 1998; Schick, 2001). Canada (Rastin, 1999) and Finland (Pakkala, 2002) state they have measured cost savings. Canada reports reduction in design costs in the order of 30 percent but also reports no improvement on other statistics such as on time delivery of designs and accuracy of cost estimation (Rastin, 1999). Finland reported a cost saving of 20 percent in the first year of operation but fails to report cost savings in later years when the operation became more complicated with labor unions and private companies making increased demands (Pakkala, 2002). Australia has followed the path of progressively contracting out more and more of the work of their state transportation agencies since 1980 with stated success (NSW, 2000). However, they make no attempt to quantify cost savings. They are generally supportive of the process and state that the private sector has steadily grown in ability and performance during that period but that it has become increasingly difficult to maintain the required skill level in the public sector agencies responsible for managing the contracts. To the knowledge of the authors, only one country (Sweden) has embarked on a program of privatization of their transportation agency

and then reverted back to their original systems. The reason in their case was opposition from labor unions on their plan to privatize a part of the transportation agency to compete with private companies in providing the engineering services that were privatized.

Reviewing the experience in other countries where either the entire transport agency was privatized or large portions of it were, it is clear that the general opinion is that it probably does lead to cost savings in most cases. Unfortunately, the data on cost savings is tenuous because of the difficulty of making definitive comparisons among alternatives where only one can be measured accurately.

If this study is obtaining different results to studies conducted elsewhere in the world, what is the explanation? How are cost savings accomplished in actual applications if they do not seem to be realized in a theoretical assessment? Some explanations are suggested below based on the review of the literature and agency findings:

1. There has not been an assessment of the quality of the product produced by private sector in past applications of privatization of public sector activities, and it is possible that the quality of the product produced is lower than that provided by the public sector because the private sector will maximize their profits by just meeting standards and specifications, but not exceeding them, while the public sector does not have that constraint.

2. Private sector companies may be realizing lower profit margins than they usually do as the try to penetrate a new large market that represents a rare opportunity for growth. Low profit margins were reported in the Swedish privatization experience.

3. Some costs associated with privatization, such as the establishment of new laws, preparation of detailed specifications and standards, administration of contracts, and added quality control requirements, may not be accounted for in the cost assessment.

One of the implicit assumptions made in promoting privatization is that private enterprise will establish efficiencies and minimize cost. However, this assumes that free and fair competition exists in the market, and this is difficult to achieve when privatizing a state transportation function. The activities performed by state transportation authorities are so diverse and so extensive that few private sector organizations can effectively compete in providing all the services. Breaking the activities down by geographic location or type of operation to make them more amenable to private sector competition is feasible, as evidenced

by the level of outsourcing currently practiced in state DOTs, but it does add to the contract management role considerably. If the DOT cannot handle the added contract management responsibilities, these in turn can be contracted out, although the arrangement that competitors are also on occasion supervisors is not desirable. If the public sector retains the management role then it is similar to the present arrangement where individual activities are outsourced. In the public sector management arrangement, the activities that are outsourced can be selected based on the success with which that can be done, the level of outsourcing can be determined for each activity, impartiality of administration can be enforced through the political process, and the public agency can ensure that it retains the skills necessary to perform its duties well.

Beside cost considerations, non-cost factors are significant in the decision to privatize the transport sector. In all cases where privatization has been initiated, it has been motivated by poor economic conditions prevailing at the time and the need to obtain a greater return from public funds. However, it has required political will and skillful negotiations with stakeholders to implement. It requires commitment and resolve to implement a program of privatization.

Those that have chosen to privatize their transport operations have all stated that the process they employ is constantly evolving as they find out what works and what does not, where they can expand and where they need to contract, and what new opportunities present themselves. Those who administer the system are generally in favor of it and believe it is beneficial but independent observers, such as Professor Schick (Schick, 1996; Schick, 1998) suggest that there are both pros and cons, even if the pros tend to outweigh the cons.

The one thing that stands out in regard to experience in other countries and the experience that could be expected in the U.S. is the size of transportation agencies in the U.S. As shown in the analysis in this study, the civil engineering operations alone involve a contract amount estimated at approximately $262 million per year in Louisiana. For private companies to be able to handle that volume of work in a competitive manner would be difficult to achieve without a progressive growth in the industry as achieved in Australia over several decades.

Another concern is the manner in which state DOTs function within the organizational structure of transportation agencies in the country, federal legislation that applies to them uniformly across the country, the responsibilities and duties they carry within that structure, and the cooperation and interaction they enjoy. For example, research is conducted in a collaborative manner between state DOTs in the U.S., information is shared, peer reviews are

conducted, and states cooperate in establishing uniform standards, joint projects, and national agencies such as AASHTO (American Association of State Highway and Transportation Officials), the National Cooperative Highway Research Program (NCHRP, numerous highway safety programs administered by the state, and emergency evacuation of transit-captive households during an emergency to name a few. It is not clear to what extent these activities could be continued if a state DOT were privatized, and what impact this would have on programs in transportation that all transportation professionals share in such as the Annual Meeting of the Transportation Research Board, research conducted at state Transportation Research Centers, and publications provided by AASHTO.

Considering the information above, it is concluded that privatizing civil engineering operations in DOTD will not lead to significant cost savings and that non-cost factors associated with privatization do not, on balance, justify privatization either.

RECOMMENDATIONS

Based on the cost analysis conducted in this study and consideration of the non-cost factors associated with privatization of civil engineering operations in DOTD:

1. It is recommended that civil engineering operations in DOTD not be privatized. This recommendation is based on the finding that cost savings are not expected to result from privatization of this activity, and the circumstances in which DOTD resides do not, on balance, favor privatization of the civil engineering operations of the Department

2. It is recommended that opportunities to expand outsourcing individual activities in DOTD be explored. This recommendation is based on the fact that progressive, selective outsourcing of individual activities can ensure that the most beneficial cases are outsourced, the private sector is progressively capable of handling more and more of the activities of the Department, but the viability of the core operations of the Department such as policy formulation and quality control are protected.

ACRONYMS, ABBREVIATIONS, AND SYMBOLS

$	US Dollars unless otherwise specified
AASHTO	American Assoc. of State Highway and Transportation Officials
AT&U	Alberta Transportation and Utilities
b	billion
BOOT	Build, Own, Operate, and Transfer
CAIT	Center For Advanced Infrastructure And Transportation
CCCD	Crescent City Connection Division
CE	Construction Engineering
CEI	Construction, Engineering and Inspection
CEO	Chief Executive Officer
cm	centimeter(s)
CTR	Center for Transportation Research
DCL	Dual Career Ladder
DNR	Louisiana Department of Natural Resources
DOT	Department of Transportation
DOTD	Department of Transportation and Development
EAP	Emergency Action Plans
ENG	Engineer
FAA	Federal Aviation Authority
FARS	Fatality Analysis Reporting System
FDOT	Florida Department Of Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
ft.	foot (feet)
FY	fiscal year
GAO	Government Accountability Office
GDOT	Georgia Department Of Transportation
GDP	Gross Domestic Product
GICA	Gulf Intracoastal Canal Association
HPMS	Highway Performance Monitoring System
HR	House Resolution
hr.	hour(s)
HSIP	Highway Safety Improvement Program
IDBB	Insourced Design-Bid-Build
in.	inch(es)

IT	Information Technology
ITS	Intelligent Transportation System
LA	Louisiana
LADOTD	Louisiana Department Of Transportation and Development
lb.	pound(s)
LOOP	Louisiana Offshore Oil Port
LOTA	Louisiana Offshore Terminal Authority
LRSP	Local Road Safety Program
LSU	Louisiana State University
LTRC	Louisiana Transportation Research Center
m	meter(s)
MUTCD	Manual on Uniform Traffic Control Devices
MWD	Ministry Of Works and Development
NASHTU	National Assoc. of State Highway and Transportation Unions
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NRB	National Roads Board
NSW	New South Wales
NWC	National Weather Center
NYSDOT	New York State Department Of Transportation
NYU	New York University
NZTA	New Zealand Transport Agency
ODBB	Outsourced Design-Bid-Build
ODOT	Oregon Department of Transportation
OECD	Organization For Economic Cooperation and Development
ORVA	Ouachita River Valley Association
PAL	Ports Association of Louisiana
PCI	Pavement Condition Index
PE	Preliminary Engineering
PI &E	Public Information and Education
PRC	Project Review Committee
QA	Quality Assurance
QC	Quality Control
RRVA	Red River Valley Association
S4PRC	States For Passenger Rail Coalition
SCORT	Standing Committee On Rail Transportation
SCOWT	Standing Committee On Water Transportation

SHSP	Strategic Highway Safety Plan
SHSRC	Southern High-Speed Rail Commission
SOE	State-Owned Enterprises
SRTS	Safe Routes To School Program
SSC	State Service Commission
STIP	State Transportation Improvement Program
TEA-21	Transportation Equity Act of the 21st Century
TIM	Traffic Incident Management
TTEC	Technology Transfer and Education Center
TxDOT	Texas Department Of Transportation
U.S.C.	United States Code
UNCL-REG	Unclassified Regular
USACE	US Army Corps Of Engineers
VDOT	Virginia Department Of Transportation
WDSC	Works and Development Services Corporation

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APPENDIX 1: HOUSE RESOLUTION 105

LOUISIANA HOUSE OF REPRESENTATIVES

ENROLLED

Regular Session, 2012

HOUSE RESOLUTION NO. 105

BY REPRESENTATIVE CONNICK

A RESOLUTION

To urge and request urge and request the Department of Transportation and Development and the legislative fiscal office to study the possibility of privatizing civil engineering operations in the department.

WHEREAS, in a Department of Transportation and Development (department) report to the Streamlining Commission (commission), the department reported that in Fiscal Year 2009-2010 it would outsource seventy-nine percent of its total budget, including all or a portion of construction, design, construction engineering and inspection, mowing, signal repairs, litter collection, and a number of professional services; and

WHEREAS, the department's office of engineering employs four hundred ninety-six civil engineers whose duties range from research, traffic engineering, road and bridge design, project development, and project management; and

WHEREAS, a report from the Honorable Maurice McTigue of the Mercatus Center at George Mason University (report) to the commission identified the possible privatization of civil engineering operations at the department as an area to study; and

WHEREAS, the report suggested that the whole civil engineering activity at the department "should be subjected to privatization study and sold off as a stand alone business"; and

WHEREAS, the report further suggested that "consideration might be given to current staff becoming shareholders in the new corporation and the state should then competitively bid its engineering requirements"; and

WHEREAS, the privatization of this area could potentially reduce government spending, increase efficiencies in state government, and alleviate a cash-strapped department from costly expenses; and

WHEREAS, the report only suggests one method of privatizing civil engineering activities in the department while other methods of cost savings by making changes to civil engineering activities in the department may have merit.

THEREFORE, BE IT RESOLVED that the House of Representatives of the Louisiana Legislature does hereby urge and request that the Department of Transportation and Development and the legislative fiscal office study the possible privatization of civil engineering activity within the department or other ways that changing the civil engineering activity within the department to potentially reduce government spending, increase efficiencies in state government, and alleviate a cash strapped department from costly expenses.

BE IT FURTHER RESOLVED that the department and the legislative fiscal office shall submit a written report of its findings and recommendations to the House and Senate committees on transportation, highways, and public works and the Joint Legislative Committee on the Budget no later than February 1, 2013.

BE IT FURTHER RESOLVED that a copy of this Resolution be transmitted to the Department of Transportation and Development and the legislative fiscal office.

SPEAKER OF THE HOUSE OF REPRESENTATIVES

APPENDIX 2: MERCATUS REPORT

From the Desk of Hon. Maurice McTigue

MERCATUS CENTER

GEORGE MASON UNIVERSITY

Louisiana Streamlining Commission

Suggested Recommendations to Advisory Committee Chairmen

Preamble:
The following comments on this cover sheet have been prepared at the Mercatus Center by Hon. Maurice McTigue. The purpose of the analysis was to identify issues that the committee might pursue and finally develop into recommendations to the full commission.

- The suggested recommendations are based on very limited information and the committee's local knowledge may determine that the suggestions are not viable. In that case the Committee should discard the suggested recommendation.
- If the Committee thinks the suggestion has merit then they should refer it to officials for their analysis.
- Some of our suggestions may be recommending a practice that is already in place, in which case the recommendation may be put aside or may be worded to endorse that practice or to extend it further than is the current practice.

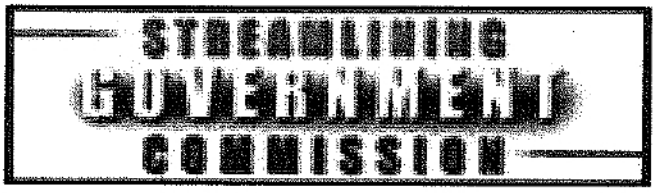
Department of Transportation and Development

- The core business of the DOTD is all modes of transportation.
- Under the Secretary's Office program, the measure used to determine success should be improvement in competitiveness of the economy through more efficient infrastructure.
- Under the Office of Management and Finance program, the first measure should be to maintain the capability of the department to function. A measure of vacancies is meaningless; one key position vacant could be prejudicial to capability.
- Water Resources and Intermodal Transportation Systems should be in part cost recovery.
- The Aviation program should be on a full cost recovery basis.
- The Public Transportation program should be terminated or deferred for a number of years. A demonstrated need for this service should be present before pursuing this policy as there has been no expansion in the last three years. The need is not evident.
- The outcome addressed by the Planning and Programming department should be safety, efficiency and improved competitiveness.
- The outcome addressed by the Engineering department should be appropriately engineered projects at the most economic cost. The eighth point under measures should identify all projects over budget and not use the 10% margin currently in the measure.
- This whole civil engineering activity should be subjected to a privatization study and sold off as a stand alone business. Consideration might be given to current staff becoming shareholders in the new corporation. The state should then competitively bid its engineering requirements. The state might consider giving the new company a preferential contract for a short period of time.

- The Marine Trust program should stand alone financially at no cost to the taxpayer. This would appear to require raising the passenger cost by 70 cents. If a subsidy is to be paid it should be transparent how much the subsidy is per passenger and in total.

Savings: Current Budget $499.512 million Total Savings $26.319 million

- The infrastructure maintenance activities have a budget of $340.857 million and we can't make any recommendations about savings to this amount without project detailed costing. We would suggest some benchmarking of costs per paved mile.
- Water Resources and Intermodal Transportation Systems: suggest 50% cost recovery out of $6.753 million. Saving $3.376 million
- Aviation: suggest full cost recovery. Saving $1.295 million
- Public Transportation: suggest canceling the program. Saving $13.215 million
- Planning & Programming: no suggestion. Budget $15.360 million
- Engineering: suggest full privatization of activity. Revenue from the sale should go to the Treasury. Engineering services would still have to be purchased but competitive bidding should reduce their cost. Current budget $65.405 million. Professional opinion should be able to estimate this difference in cost.
- Marine Trust should stand alone and add no net cost to the budget. Current budget $8.433 million. Saving $8.433 million.
- The big savings here would be in the $340 million infrastructure maintenance budget and in the Engineering budget of $65 million.
- An innovative approach might be to develop a strict rate of return criteria for transportation projects with zero funding for projects that don't meet the rate of return criteria.



The Streamlining Government Commission would appreciate your assistance by having you complete the following worksheet. We understand that some of this information is available